



## Information Science and Technology Center Seminar



**David J. Marchette**  
Naval Surface Warfare Center  
Dahlgren Division (NSWCDD), Dahlgren, VA

### "Time Series of Attributed Graphs"

**Wednesday, May 12, 2010**  
**3:00 - 4:30 PM**

**TA-3, Bldg. 123, Room 102 (CNLS Conference Room)**

**Abstract:** We consider a time series of graphs in which the edges and/or vertices have associated attributes (colors). The problem is to detect a local anomaly (for example a change in the communication pattern and the topics of communications). I will review the previous work and discuss some new theoretical results. Then I will describe some new time series models that generate attributed graphs. If time permits I will discuss some issues of model fitting and model selection.

**Biography:** Dr. David Marchette is a Principal Scientist at the Naval Surface Warfare Center, Dahlgren Division (NSWCDD), Dahlgren, VA where he is responsible for leading basic and applied research projects in computational statistics, graph theory, network analysis, pattern recognition, computer intrusion detection and image analysis.

Dr. Marchette has a B.A. and an M.A. in mathematics from the University of California, San Diego, and a Ph.D. from George Mason University in Computational Sciences and Informatics (specializing in computational statistics). Dr. Marchette has taught as an adjunct faculty at George Mason University and Johns Hopkins University. He has sat on the dissertation committees of six students, and continues to serve on dissertation committees at Johns Hopkins University.

Before coming to Dahlgren, Dr. Marchette worked at the Naval Ocean Systems Center from 1985 until 1994, and has worked for the Naval Surface Warfare Center since. He has been involved in basic research throughout his career.

Dr. Marchette is a fellow of the American Statistical Association (ASA) and the American Association for the Advancement of Science (AAAS). He is an associate editor for the journal *Computational Statistics*, and is active in several professional societies, having held office in the Interface Foundation and the Section on Defense and National Security of the American Statistical Association. He has helped organize several conferences, including a conference on computer security, an Interface conference, and the 2008 Joint Statistics Meeting.

Dr. Marchette is the author of over 30 refereed journal publications, and has authored two books: *Computer Intrusion Detection: A Statistical Viewpoint*, Springer, 2001, and *Random Graphs for Statistical Pattern Recognition*, Wiley, 2004. In addition, he has authored 8 book chapters and myriad conference papers and technical reports. He is the recipient of several awards, including the NSWC Science and Technology Excellence Award, the NSWC Award of Merit for Group Achievement, the Government Technology Leadership Award, the In House Independent Research Excellence Award, and the Outstanding Ph.D. Dissertation in Statistical Sciences Award from George Mason University.



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